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1	371	(174/69).CCLS.	USPAT	2003/09/04 09:56
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3	319	(174/72r).CCLS.	USPAT	2003/09/04 10:04
4	491	(174/72a).CCLS.	USPAT	2003/09/04 10:05

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PROPERTIES OF THE WEEK

Times of London (TL) - Sunday, November 14, 1999

By: Mary Wilson

Section: Features

Word Count: 397

TEXT:

High-Tech homes

Inside this traditional - looking converted apple store at Mullion's development in Bibury, Gloucestershire, is a wealth of high-tech features, writes Mary Wilson. The house has Smartpanels throughout that control hi-fi, lighting, an assistance line (if you have an accident) and security. The cottage also has a multi-functional home-office/studio, underfloor heating, central vacuuming and a heat-recovery and ventilation system. There are three bedrooms, two bathrooms, a small courtyard, a conservatory and a garage with cupboards. Mullion (01285 740111) is selling the Apple Store for Pounds 450,000.

This large house at Langley Park, Beckenham, Kent, is built by Laing Homes and is pre-wired to run a network of computers, satellite and digital TV and CCTV. The computers in the bedroom and downstairs study are linked and there is also an integrated sound system, operated by remote control. This house has a living room, dining room and large kitchen/family room, plus utility room and study on the ground floor, five en-suite bedrooms on the first floor and two further rooms in the loft space. With an attached double garage, it is for sale for Pounds 780,000 (Laing Homes, 01293 544844).

One of the two houses at Sunley Estates' development in Reigate, Surrey, incorporates the Connect Home Integrated Entertainment and Information System. This enables the owner to watch cable, satellite, video and terrestrial TV from any TV in the house. You can play music in any room, even in the bathroom, and telephone lines are provided in every room, plus BT Highway or ISDN lines in the study. It also has CCTV with monitoring abilities within the house. The five-bedroom house has two bathrooms, one en-suite, and an integral double garage. It is priced at Pounds 355,000 (Sunley Estates, 01403 230033).

A newly built house, designed by Niall McLaughlin, in Clareville Street, London, SW7, has all the latest technology, including cabling for a home cinema system and central audio distribution. It has also been designed so that the lights, blinds and security can all be controlled via a modem connected to an external phone, which can be accessed from anywhere in the world.

The house is on four floors with five bedrooms, three bathrooms and an interior courtyard on the top floor. Chesterfield (0171-581 5234) and FPD Savills (0171-730 0822) are selling the house for Pounds 2.55m.

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St. Louis Home-Builder Pushes DSS

Kramer, Staci D.

Multichannel News, p72

March 17, 1997

TEXT:

STACI D. KRAMER

New homeowners buying from one top St. Louis builder will be able to pass up the ads offering full financing for a new satellite dish.

In fact, they won't even have to think twice about getting a dish, because every home built by The Jones Co. after Jan. 1 comes with a pre-installed Digital Satellite System dish.

The program is called 'Home Systems 2000,' and it represents a large jump from the current standard of pre-wiring for two or three cable outlets and several telephone jacks as a bow to technology. The Systems 2000 package may be at the beginning of a trend to upgrade those standards as a way of incorporating increasingly sophisticated technology into the very fabric of new homes.

In addition to a DSS dish and an off-air antenna that precludes the need for cable in most of the areas where Jones is now building, Systems 2000 includes a full security system and pre-wiring for six two-line telephone jacks (including a jack wired specifically for integrated services digital network), six cable outlets, a second satellite receiver and six surround-sound speakers for a home theater. The cable outlets can be used for cable or to spread the satellite signal throughout the house.

The idea came out of a brainstorming session among executives at Jones, according to Kelly Meyer, director of marketing.

'This was something that we thought we could add to all of our houses that every household is going to want and need,' Meyer recalled. 'Everybody who walks in [the display homes] knows about it, especially in our 30-to-54 age group. The empty-nesters don't seem to care about it as much.'

The installations are being done by ABF Security Systems Inc., a St. Louis firm that doesn't even advertise its satellite-installation division.

ABF president Mike Polizzi said the 200 satellite installations that his company has done in the last year are for builders and current customers. Jones built 400 new homes last year, and it hopes to build 450 this year; all of the new homes will be equipped with Systems 2000. Jones and ABF estimated the package's value at \$2,500, but Polizzi said that number could easily be \$1,200 to \$1,500 higher in labor costs if most of the wiring is done after a home has been built.

Most of the Jones customers will get an RCA DSS dish.

'DSS seemed to be more acceptable in general to the public due to the advertising out there,' said Polizzi. Of the 30 new homeowners that he's dealt with since the deal began, Polizzi said 28 have opted to initialize the dishes and sign up for programming at a cost of about \$30 to \$35 a month. A couple have asked for EchoStar Communications Corp.'s Dish Network instead of DirecTV Inc. or United States Satellite Broadcasting Inc., and they are paying a small upgrade for the change in equipment, but no one has asked about PrimeStar Partners L.P. or any of the other proprietary dishes.

Polizzi pays about \$110 for the DSS dishes that he installs. ABF gets a 'nominal fee' for selling programming, but the new homeowners don't have to sign up through the installer. Instead, he hopes to gain by selling upgrades like additional receivers or other non-satellite-related equipment.

The Jones gimmick may only affect a few hundred homes, but it has implications far beyond that small number.

'The bottom line on all of this: The consumer benefits. No matter what

happens, the consumer gets choices,' said Wiley Reed, director of commercial services for EchoStar.

Reed has worked with a Denver builder to provide pre-wiring for EchoStar's dish, and he's even worked out a deal with some mobile-home builders, but this is the first he's heard of a builder automatically providing a dish as part of the new home's cost. However, he'd prefer to hear that customers are being given a choice of programming, and that the hardware is the second step.

'If I go in to pre-wire a house for satellite communications, it's all generic. It's the dish and the box that sits on the TV that are different and, quite frankly, between us and DirecTV, the only difference is the box that's on the TV,' said Reed. Instead, he suggested offering the new owners brochures that explain the different programming options available, and then matching the hardware to their needs.

PrimeStar spokeswoman Katie Stephan wasn't aware of this program, but she said PrimeStar has been approached by some builders with a similar idea. Even if the builder chooses a different dish as their standard offering, she sees it as a positive trend for the whole satellite industry.

'The home-builder is making it easier for people to make the decision to go to satellite TV,' Stephan said, adding that the program suggests that satellite is as much a necessity as telephones. 'They want to give their people all of the options possible.'

'Everything's so multimedia-oriented today that it makes a lot of sense,' said Jim Jungjohann, cable industry analyst for A.G. Edwards. It especially makes sense, he added, in new subdivisions, where cable typically isn't installed until most of the new construction is finished.

Cable companies know they're especially vulnerable in that situation.

'That's been a particular challenge in St. Louis because of how developers develop,' said David Niswonger, regional vice president of Charter Communications Inc. Instead of building each new home next to each other, many developers opt to build on lots as they're sold - a practice that often leaves wide gaps between new homes.

'While there's some challenges that relate to the amount of passings per mile, the real problem has been developers cutting your cable. The decision in the last four to five years has been to wait until subdivisions are 50 percent built out,' Niswonger said. 'We are being more aggressive now, [but it] generally still falls in the 25 percent to 30 percent range.'

Niswonger is intrigued by Jones' idea. 'The one message that it sends is that you ought to have a multichannel provider in your home. A new home built in the '90s needs to be wired for multichannel video. There's a positive signal there [that] multichannel delivered product has become a staple.'

Niswonger and his colleagues at other systems know that they face a challenge from satellite - a challenge that becomes even greater when ownership becomes as easy as plugging in a phone.

Terry Warren, general manager of Time Warner Cable's American CableVision system in North St. Louis, can tell you exactly how many of his subscribers have dropped cable for satellite dishes in the last year - 44. His service technicians and installers keep an eye out for new dishes in their area, and customer service sends him the names of any subscribers who cite a new dish as a reason for canceling their service. The names and addresses end up in a database that he maintains for target marketing.

'I go after basic only,' said Warren. A sample of his pitch: '\$10 a month - that's nothing. It keeps you in touch with local events and gives you cable throughout the house with no equipment to maintain.'

But Polizzi can think of very few situations where 'his' satellite-owners would need cable at all. He thinks that most of them will end up using the pre-wired cable outlets to distribute the satellite signal.

Tele-Communications Inc.'s recently announced 'Cable Plus' may provide the answer: a combined satellite-cable package offered by the same

provider. MCN

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Radio Location and Communication Satellite Systems

Grenzeback, Lance R.

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Potential Significance:

We believe that new developments in satellite-based systems will soon provide effective location and two-way communications capabilities over long distances. The first commercial application for these systems is likely to be in the transportation industry, particularly long-distance trucking firms and similar operations that must closely monitor widely-dispersed people and equipment. The technology will help the transportation industry reduce operating costs and improve the service reliability.

Technology:

Recent developments in both telecommunications and computers have made satellite communication systems feasible as an effective and economical way to establish location and two-way communications. The transportation industry is likely to be the first to take advantage of this new technology.

Trucking companies, for example, will be able to locate a truck anywhere in the United States and establish two-way communications between the dispatcher and the driver. Truckers will be able to pinpoint the location of their units and accurately estimate the time of arrival at the next pick-up or delivery point. This will be a welcome tool for pick-up and delivery services and for truckers who supply just-in-time manufacturing operations and must make their deliveries within tightly defined time windows, some as small as ten minutes.

Truckers will be able to match trucks and available loads more quickly, reducing mileage spent on empty backhauls. Truckers will also be able to relay information about changes in route, weather conditions and mechanical problems. For truckers handling perishable foods or hazardous materials, this kind of timely information can translate into substantial savings. And for long-distance trucking firms that now spend up to \$1,500 or more per truck annually on long-distance telephone calls, satellite systems may be able to provide more timely information at lower cost.

National and large regional truck firms that run specialized or variable route services will be the early market for satellite-based systems. These systems will first augment, and then replace long-distance telephone and two-way radio systems.

The railroads are already experimenting with satellite location and communication systems as part of their effort to build automatic train control systems. With this new technology, the railroads hope to see the last of the days when one train sits idling on a siding for hours waiting for a passing train to clear the track. We expect other transportation operations that need timely location and communication services will take advantage of satellite systems; for example, police and rescue operations, bus and rail transit services, and survey crews.

One commercial radio location / communication satellite system is under way in the United States, and several other companies have announced their intention to compete in this business. Geostar of Princeton, New Jersey, launched the first satellite of its commercial radio location and

communication system in March 1986. The Geostar system has three basic components:

1. Individual transceivers (transmitters / receivers) installed in the truck cab;
2. Satellites in geosynchronous orbit above the equator;
3. Powerful groundside computer systems linked to telephone and microwave communication networks.

A dispatcher trying to locate a particular truck will send a request to the central computer. The request will then be transmitted from the computer to the satellite to the truck and a message will appear on the transceiver unit in the cab. The truck driver can respond with a pre-encoded message or simply press a button to acknowledge the message and send his location to the satellite. The satellite will relay the message or signal to the central computer, which will determine the exact location of the truck and send this information to the dispatcher via telephone or satellite. Or, the driver can initiate a message, transmitting it to his home office and receive a reply from the dispatcher.

Two or more satellites positioned 23,000 miles above the United States will capture the transceiver signal. Each satellite will receive the signal at a slightly different time allowing the ground computer to calculate the exact location within several meters by trilateration.

The transceiver will be located in the truck cab. It will use a liquid crystal display to show incoming and outgoing messages. Drivers will use an alphanumeric keyboard to type in responses or precoded messages. Each unit will have a unique digital identification code to ensure privacy and provide a reliable means of billing users. The messages can be encrypted to protect confidential business information.

The transceiver units will eventually be about the size of a small book. Initial cost will be about \$3,000 per unit, but costs are projected to drop to \$500 per unit within five to ten years, and perhaps as low as \$150 per unit as volume production increases. Users subscribing to the service will be charged on a message unit basis. Subscribers will be able to choose the level of service they want; trucks can be polled for their location every day, every hour, or every minute, depending upon the company's needs. Messages can be transmitted regularly or as needed. The satellites are expected to be capable of carrying 50 million messages per hour between more than 100 million users.

Future Systems:

In the near future, we expect to see location and communication systems linked to vehicle monitoring systems (onboard truck computers) such as those manufactured by Fleet Tech, Cadec, Rockwell, TRW, and others. Vehicle monitoring systems are another technology that is benefiting from the advance of microcomputer technology. These systems are evolving from simple mechanical tachographs, which record speed and engine revolutions into sophisticated onboard computers. They are now being used to monitor the condition of engines, refrigeration units, and safety and security systems and to track the operation of the vehicle for better driver management and insurance records.

Companies will soon use onboard computers to hold vehicle maintenance records so that diagnostic and maintenance work can be carried out anywhere in the country. Others are experimenting with the use of computer-based driver logs, permits, and waybills. Within five to ten years, we expect that most new trucks will be prewired by their manufacturers for vehicle monitoring systems. Any of the information collected by vehicle monitoring systems could be relayed between the truck and its home office by the new satellite systems.

Radio location / communication satellite systems will also be linked to onboard navigation systems. Etak, Inc., of Menlo Park, California, has developed digitized map databases that can be displayed on a video monitor in a truck cab or automobile. Linked to a magnetic compass and sensitive wheel odometers, or in the future to a satellite location system, the Etak

system can pinpoint the truck's position on a video display street map and plot directions to the truck's destination.

Trends and Driving Forces:

Interest in radio location and communication services is being spurred by the deregulation of the trucking industry and the resulting fierce competition among truckers. The ability to monitor trucks closely enables a company to reduce costs, plan loads better, respond to emergencies faster, and advise customers about shipment arrival times more accurately. The more sophisticated trucking companies are already developing computer-based routing and scheduling systems to help dispatchers track and allocate equipment in the most cost-effective manner. The information provided by radio location and communication systems will make these investments pay off even faster.

The major hurdles to the implementation of radio location / communication systems will be government licensing of the radio frequencies needed for their operation and the availability of satellites. In July 1985, the Federal Communications Commission announced that it had decided to allocate certain bands of frequencies for radio determination satellite services, but it is unlikely that there will be enough available frequencies for all private companies wanting to compete in this market. The recent shuttle disaster and the series of setbacks experienced by NASA, the U.S. Air Force, and the French with unmanned rockets, has cut back the number of communication satellites available to carry the new services.

Likely Timing of Impacts:

The Geostar system is expected to be operational by late 1986. Geostar received a patent on its system in November 1982 and received FCC permission in December 1985 to operate its startup system. In March 1986 Geostar launched its first satellite package aboard a GTE G-STAR communications satellite. This unit will provide limited message communication service by the fall of 1986. Until a second satellite unit can be launched, the initial Geostar transceivers will be equipped with a LORAN-C receiver. LORAN-C is a network of government maintained radio transmitters that were originally established for nautical navigation and now cover most of the continental United States. The Geostar transceiver will use the LORAN-C signals to determine the truck's location and then relay the location fix via the Geostar satellite to the groundside computer in New Jersey, which will then relay it to the dispatcher. The driver will be able to send messages to the dispatcher, but the dispatcher will not be able to respond until full service is implemented.

Competitive Environment:

Geostar is the leading developer of radio location / communication satellite service in the United States and is closest to implementing a workable system. Geostar has placed orders for production of some 12,000 transceivers and claims that most have sold. Leaseway Transportation Corporation, headquartered in Cleveland, has ordered 100 Geostar transceivers to test in their truck operations, and Westinghouse Electric has ordered transceivers to monitor the movement of nuclear waste shipments throughout the country.

Several other private companies have also announced their intention to compete in this market. The Mobile Satellite Corporation, Skylink America, Ltd., Hughes Communication, OmniNet, and others--a dozen in all--have applied to the FCC for licenses to operate mobile satellite services (MSS)--satellite-based cellular telephone systems. These systems are designed to provide telephone communications and can link trucks with home offices for voice or data transmission. Several have proposed to provide location services as well; Mobile Satellite Corporation has demonstrated the service using a NASA satellite.

The U.S. Department of Defense's NAVSTAR Global Positioning System (GPS) may provide yet another vehicle for radio location service. When fully implemented, the NAVSTAR system will have 24 satellites in orbit providing complete coverage of the earth. The NAVSTAR system is a passive

system, similar in operation to the ground-based LORAN-C system: the satellites transmit timed signals, and the vehicle is equipped with a receiver and a microprocessor capable of decoding the signals and calculating latitude and longitude. The system's high-precision signals are reserved for military use, but less precise signals will be available for civilian applications. Motorola/Sperry, Collins, King Radio, and Magnavox are positioning themselves to supply the general aviation and surface transportation markets. The current generation of receivers range in cost from \$15,000 to \$150,000 per unit, but cost estimates for volume production have been put as low as \$500 to \$2,000 per unit. Location information from a GPS receiver could be relayed through a mobile satellite service or stored in an onboard computer.

Additional Readings:

Armstrong, J., "Vehicle ID: The Search Ranges Far and Near," Railway Age, November 1985.

Betz, J., "The Freight That Comes in From the Cold," Distribution, December 1985.

Bulloch, C., "Navstar Moves Ahead; But Will Geostar Outshine It?" Interavia, December 1985.

DESCRIPTORS: Communications equipment; Transportation; Cost control; Satellite communications

COMPANY NAME(S): Leaseway Transportation; Westinghouse Electric; Mobile Satellite; Skylink; Hughes Communications; Motorola; Sperry; Collins & Co.; King Radio; Magnavox

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